Physics 10 Midterm exam 1 – Short Questions February 24, 2005

Last name_____ First name_____SID_____

Short questions (1 point each, 20 points total). Read the questions carefully so that you don't misinterpret them (e.g. by missing a word such as "not").

1. Hybrid autos are useful because
   ( ) they don't use gasoline
   ( ) they use less gasoline
   ( ) they use solar energy
   ( ) they do not emit carbon dioxide

2. Terminal velocity for humans is about
   ( ) 10 miles per hour
   ( ) 100 miles per hour
   ( ) 1000 miles per hour
   ( ) 100 meters per second

3. Energy in butter, compared to flashlight battery:
   ( ) about the same
   ( ) 10x less
   ( ) 10x more
   ( ) 1000 times more

4. An hour of very hard exercise uses the energy in how much fat?
   ( ) 3 ounces
   ( ) 1 pound
   ( ) 2 pounds
   ( ) 10 pounds

5. A typical nuclear power plant is
   ( ) about 1 kilowatt
   ( ) about 1 megawatt
   ( ) about 1 gigawatt
   ( ) about 1 terrawatt

6. When a nuclear reactor loses its coolant, what happens?
   ( ) the chain reaction stops
   ( ) the radioactivity stops
   ( ) the fission fragments are lost
   ( ) heat is no longer produced

7. The Nagasaki bomb was based on
   ( ) U-235
   ( ) U-238
   ( ) Pu-239
   ( ) H-2 and H-3

8. Energy from the sun is from
   ( ) hydrogen fission
   ( ) plutonium fission
   ( ) uranium fusion
   ( ) hydrogen fusion

9. The most dangerous part of fallout is:
   ( ) carbon dioxide
   ( ) plutonium
   ( ) fission fragments
   ( ) lead

10. The typical velocity of water in your blood (the speed that molecules shake) is about
   ( ) 1 mile per 5 seconds
   ( ) 186,000 miles per second
   ( ) 1 cm per second
   ( ) 0

11. Solar power is about
   ( ) 10 watts per square meter
   ( ) 10^3 watts per square meter
   ( ) 10^6 watts per square meter
   ( ) 10^9 watts per square meter

12. Ice melts at what temperature? Mark ALL that are correct.
   ( ) 32 F
   ( ) 0 C
   ( ) 273 K
   ( ) 0 K

13. A refrigerator operating in a room
    ( ) warms the room
    ( ) cools the room
    ( ) has no effect on the room
    ( ) removes water vapor from the room

14. The pipe in a pipe bomb is there
    ( ) because its fragments do most of the damage
    ( ) only to hold the explosive
    ( ) to contain the explosion and minimize the damage
    ( ) to make the explosion go out the ends

15. To make hydrogen undergo fusion, the main thing needed is
    ( ) carbon to act as a catalyst
    ( ) very high temperature
    ( ) a moderator
    ( ) a critical mass

16. Depleted uranium is used
    ( ) in dirty bombs
    ( ) in artillery shells
    ( ) in nuclear reactors
    ( ) in homemade bombs

17. Yucca Mountain will be used
    ( ) for a solar power plant
    ( ) as a site for wind mills
    ( ) to extract geothermal energy
    ( ) to store nuclear waste

18. Geologists search for oil by trying to measure its
    ( ) gravity
    ( ) gamma rays
    ( ) beta rays
    ( ) microwaves

19. An astronaut in orbit is weightless because
    ( ) he is above the Earth's gravity
    ( ) the moon balances the Earth's gravity
    ( ) he is constantly "falling"
    ( ) He isn't. He is "massless."

20. Volcanic heat comes from
    ( ) hydrocarbons
    ( ) fission
    ( ) fusion
    ( ) radioactive decay

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